

REVIEW OF THE ECONOMICS UTILIZED IN THE PROPOSED EPA REGULATIONS OF CAFOs

AFPC Working Paper 01-8

David P. Anderson
Edward G. Smith
James W. Richardson
Ronald D. Knutson
Abner W. Womack



Agricultural and Food Policy Center
Department of Agricultural Economics
Texas Agricultural Experiment Station
Texas Agricultural Extension Service
Texas A&M University

July 2001

College Station, Texas 77843-2124
Telephone: (979) 845-5913
Fax: (979) 845-3140
Web Site: <http://www.afpc.tamu.edu/>

Review of the Economics Utilized in the Proposed EPA Regulations of CAFOs

EPA recently published, for comment, a proposed set of modifications for the regulation of confined animal feeding operations (CAFOs). These proposed regulations require considerably tighter controls over discharges of animal waste. Compliance will require substantial investments by those operations that had not previously been subject to regulation because they did not meet the minimum size requirements.

This review of the proposed EPA CAFO regulations results from a request of the House Committee on Agriculture to FAPRI (MO) and AFPC (TX). While designed to evaluate the procedures utilized by EPA in its economic impact statement, it also discusses alternatives for improvements in the analytical impact statement approach in order that the statement may be made economically valid. To that end, this review critiques the basic economic analysis of livestock operations as performed by EPA.

Review of Economics

The basic procedure utilized by EPA involved the use of farm level survey data collected by ERS/USDA. While this data is useful in monitoring economic conditions in agriculture on various sizes and types of farms, it cannot be effectively utilized to perform the type of analysis conducted by EPA. This is the case because the sample drawn is not sufficiently large to obtain the level of specificity required to conduct the EPA impact analysis without breaking the confidentiality agreement with the respondents. Therefore, the sample does not fit the operations being regulated. For example, if a regulation calls for evaluating the impacts of proposed animal waste regulation on beef feedlots, the sample must include a sufficient number of beef feedlot

operations to be statistically valid. A sample that includes a combination of cow-calf operations, which may also have crop sales, and feedlots cannot be utilized to draw conclusions regarding the impacts on feedlots alone. Because of the limitations in size of sample, AFPC has rejected the use of ARMS data for purposes of the type used by EPA.

Additionally, EPA divided value of production on sales reported by the sample farms by the number of head to get a per unit gross revenue and net cash income per head. This approach credits all returns on the operation to the livestock. The result is an incorrect picture of gross and net returns to the various livestock production units, particularly when income from crops is also generated by some of the sample farms.

The questionable results inherent in the EPA application of ARMS data are clearly indicated by comparing the EPA results with publicly available alternative sources generally utilized by industry analysts in both the public and private sector.

The issue is also one that may be termed an enterprise versus whole farm level issue. EPA has taken a farm level view of the issue and reduced it to a per livestock unit approach. In essence, the rest of the farm's enterprises would subsidize the costs of complying with new CAFO regulations. The enterprise level view would involve looking at only the cattle feeding enterprise, for example. In this case, the livestock enterprise in question would have to cover the costs. Most economists would maintain that producers will make decisions based on the enterprise costs and returns.

EPA has categorized farms by whether they have enough land on which to spread their livestock manure. Livestock operations that do not have enough crop land or no crop land to spread manure on will make decisions on an enterprise basis. For livestock producers that have no crop production or other enterprises, the enterprise level and farm level will be the same. The

disparity on farm returns drawn from the ARMS data will be even greater when compared to farms whose sole operation is their livestock enterprise. Examples of these are large feedlots, hog and poultry growers.

Beef feedlots. A beef feedlot typically receives calves weighing 300-500 pounds and/or stocker animals weighing 500-800 pounds and feeds them out to a slaughter weight of about 1,100-1,200 pounds. In 1997, the year which EPA utilized ARMS data, USDA indicates that the U. S. average live cattle slaughter weight was 1,177 pounds and fed steers, sold at an average price of \$65.91 per cwt. live weight, for a total average return of \$775.76 per head (Table 1). The EPA analysis suggests returns for beef feedlots ranging from \$535-\$862 per head in the Midwest region and from \$502-\$854 in the Central region (EPA p. 4-30). While economies of size are apparent in agriculture this disparity between the large and medium size livestock operations when both are supposed to be producing fed cattle appears questionable.

One possible reason for the disparity in gross returns for the moderate size feedlots, indicating returns of \$535 and \$502 compared with the \$775.76, lies in the likelihood that many of the farms in the ARMS samples were not feedlots at all, but rather were cow-calf operations, meaning that they grazed mother cows on pasture and sold calves that weighed between 300-500 pounds.

Using the average gross revenue as reported in USDA's Livestock Dairy and Poultry monthly report yields a gross return of \$776.47 per head, very close to the average price and weight. The average from the Livestock Marketing Information Center Feedlot Cost and Returns estimates \$725 per head. However, this series uses an 1,100 pound steer as opposed to the 1,177 pound average live weight for 1997.

The National Cattlemen's Beef Association reported some cattle feeding returns to EPA that were included in the EPA analysis. National Cattlemen's Beef Association reported gross return was \$666.64 per head. This number is based on a per head average occupancy. It accounts for the possibility that feedlots may not be full to 100 percent capacity.

Net returns after adjusting for expenses between EPA and other sources indicate a wide disparity. The large EPA farms suggest net returns from \$256 and \$322 per head, while the medium size operations have net returns of \$79 and \$81 per head. Other sources indicate net returns per head ranging from -\$29.96 (LMIC) to \$34.39 (NCBA). USDA publishes a monthly estimate of cattle feeding returns. The monthly average net returns per head in 1997 was \$19.97.

The large discrepancy in gross and net returns per head from other published sources indicates a major problem for the EPA analysis. The estimates used by EPA overestimates actual returns and therefore indicate greater ability to pay for additional regulations than actually exists.

Hogs. The large and medium size Midwest farms are estimated by EPA to have gross returns per head of \$229 and \$304, respectively. The large and medium Middle Atlantic hog farms are estimated to have returns of \$84 and \$194 per head, respectively. However, by using USDA cost and returns data, and the USDA reported annual average price and slaughter weight report the gross returns calculates between \$120.99 and \$132.07 per head, respectively. Simply put, a 256 pound hog sold at an average price of \$51.59 per cwt. indicate returns of \$132.07 per head. Reasonable gross returns should reflect some reasonable deviation around these USDA figures. As another point of reference, gross returns reported for a large 750 sow representative Illinois hog farm developed by the AFPC were \$133.16 per head.

The \$84 per head on the EPA large Middle Atlantic farm reflects an additional problem. That problem is the nature of the ARMS survey and the rapid structural changes in the hog

industry. The industry changes complicated the survey as to who was a producer, i.e. the contract grower or the integrated company that owned the hogs. These problems makes the use of the ARMS survey data for this purpose more problematic.

The net returns estimates per head across the various sources are closer together than in fed cattle. The AFPC data for the Illinois operation reports net returns per head of \$43.00. The EPA Midwest net return data were \$47 and \$66. While EPA reports larger net returns, they are derived from significantly larger gross returns calling into question the estimated production costs.

Dairy. Gross returns per head for the EPA dairies are \$2,613 and \$2,498 for large and medium Midwest dairies. Using U.S. average all milk price and average milk production per cow yields \$2,260 per head. The EPA numbers are larger, and should be, because the average milk production and all milk prices does not include cull cow returns. The AFPC representative Wisconsin dairy has substantially higher gross returns per head than the EPA results. One reason is greater than average milk production. The AFPC Wisconsin dairy has much lower net returns per head than the EPA dairies suggesting that the net returns reflected by the EPA dairies may be overstated.

One may be able to argue that the dairy data developed by EPA should be closer to reality than the other livestock categories. That is because dairies typically have produced feed for the cows to consume, not for sale off the farm. Those non-dairy receipts then are not attributed to returns per cow. Also, many newer large dairies do not produce feed and rely on purchased feed.

Broilers. There is not much available data on broilers due largely to the nature of the industry. However, the comparison of the estimated margin, as reported by USDA, using the wholesale price and cost and an assumed 5 pound broiler gives significantly lower net returns per

bird than the EPA data. The direction of EPA returns versus alternative USDA data for broilers is the same as in the other livestock sectors suggesting that EPA has consistently overestimated returns.

Cost Pass Through

EPA has assumed that producers in the livestock and poultry sectors will be able to pass on some portion of increased costs. Individual producers, clearly, are not able to do this in livestock production. Prices can increase if increased cost of production results in a reduction in supply while demand is maintained. Production declines because some producers are forced out of business. Thus, the increase in price will be due to supply demand adjustments in the industry not the market power of an agricultural producer to pass higher cost on to the consumer, which does not exist.

Sales Test

The sales test criteria looks at compliance costs as a percent of sales. Three levels, 3, 5, and 10 percent are used to measure regulatory impacts. The important point is that 3 to 10 percent of gross sales reflects a much larger percentage change in the CAFO's net cash income position. For example, using the figures in Table 1, 3 percent of gross returns per head (or sales per head) for the EPA large Central feedlot is \$25.62. That is 8 percent of the indicated EPA net returns of \$322 head. However, when using USDA's cost-returns to cattle feeding 3 percent of gross returns equals \$23.29. When compared to the net return of \$19.97 the increase is 117 percent of net returns per head. The result is negative net returns when compliance costs total only 3 percent of gross.

The above example clearly shows the adverse conclusion that is inferred from the overestimated profitability of feedlots. The sales test approach does not measure the true impact on net returns. EPA's use of other measures in addition to the sales test approach falls short of measuring the impact of the cost of regulation when the base cost and returns data are in error.

Summary

In summary, the data source utilized and reference made by EPA is not appropriate for this analysis. The use of the USDA ARMS data combined with census of agriculture is results in inflated results for gross and net returns per head in each livestock category examined.

The returns estimates are the heart of the economic analysis of the CAFO proposed rule. The overestimate of net returns and hence, overestimate of profits, implies a greater ability to comply with additional regulations than exists in reality.

This critique has focused solely on the basic economic analysis and does not address other components of the EPA evaluation of the CAFO regulation.

Table 1. Gross and Net Returns per Animal for Cattle, Hogs, Dairy, and Broilers, 1997.

	Gross Returns \$/head	Net Returns \$/head	Notes
Feedlots			
EPA large Midwest	862	256	
EPA med. Midwest	535	79	
EPA large Central	854	322	
EPA med. Central	502	81	
USDA cost-returns	776.47	19.97	avg. margin*avg. wt, 1177 lbs
USDA avg. pr.*wt.	775.76		1177 lbs. *65.91
NCBA (PHAO)	666.64	34.39	Survey, reported by EPA
LMIC	725	-29.96	@ 1100 lb steer
Hogs			
EPA large Midwest	229	47	
EPA med. Midwest	304	66	
EPA large Middle Atlantic	84	31	
EPA med. Middle Atlantic	174	31	
USDA cost-returns	120.99	11.19	net=margin*weight, 256 lbs
USDA avg.pr.*wt.	132.07		(\$51.59*2.56 cwt)
AFPC 750 sow Illinois hog farm	133.16	43.08	240 lbs, \$.55
Dairy			
EPA large MW	2613	435	
EPA med. MW	2498	444	
USDA price *production	2260		\$13.36/cwt*169.15 cwt
AFPC 600 cow Wisconsin Dairy	3001	359	
Broilers			
EPA large MA	1.10	.50	
EPA med. MA	1.50	.60	
EPA large SO	1.20	.50	
EPA med. SO	1.40	.60	
USDA est. returns		.293	est. margin*5 lbs, using wholesale price and cost

Sources: EPA, Livestock Marketing Information Centers, USDA, Agricultural and Food Policy Center